

Creating a Collision Free Walk



This section describes how to create a collision-free path between the start point and target point of a walk activity.

A collision-free path is the spline path between the start point and target of a walk activity such that manikin, and products and resources attached to it do not collide with any of the products or resources in the layout.

This feature reduces the time required to define a walk through a clutter of resources by finding the shortest collision-free path.

Note: Currently, this feature is available only for Walk forward and Walk backward activities.



This feature includes:

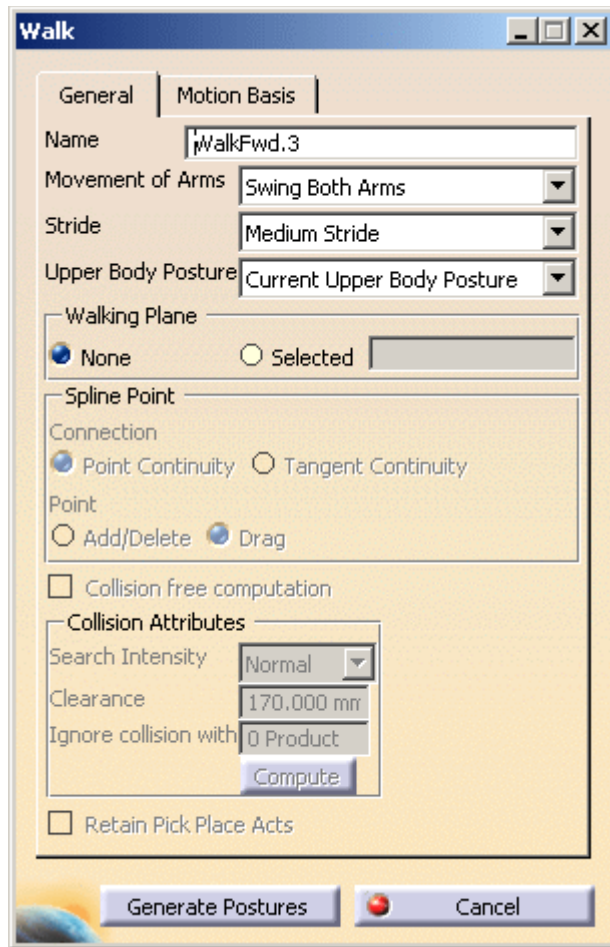
- ▶ Ability to remember the search intensity and clearance value in [Tools / Options](#) settings so that these values do not have to be remembered and set each time collision free walk is being used.
- ▶ Ability to set the direction of the end posture of walk
- ▶ Capability to provide a 'true collision free' capability by taking into account the swinging of arms during walk, the picked object (if any). Without this capability, the scope of this functionality is greatly reduced.
- ▶ Capability to ignore certain products/parts during collision free path (collision capable parts or movable obstacles). In the shop floor, generally users put a surface area on the walk plane for dividing the sections (station, line, factory, etc); manikin must not walk around these areas.



1. Select **Creates a Walk Fwd Activity**  from the **Walk Activities** toolbar, and then select the manikin from the resource tree.



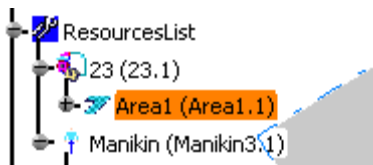
The **Walk** dialog appears.



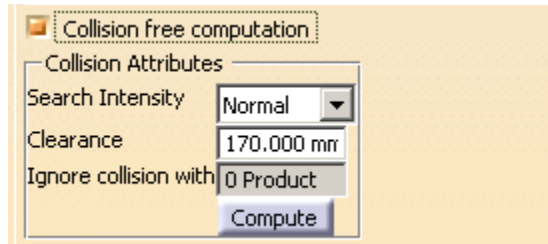
2. To perform collision free walk, you must select the Walking Plane by checking the **Selected** option as shown below. The walk dialog is subsequently minimized.



3. Now select the walking plane either in the resource tree or in the 3D view.



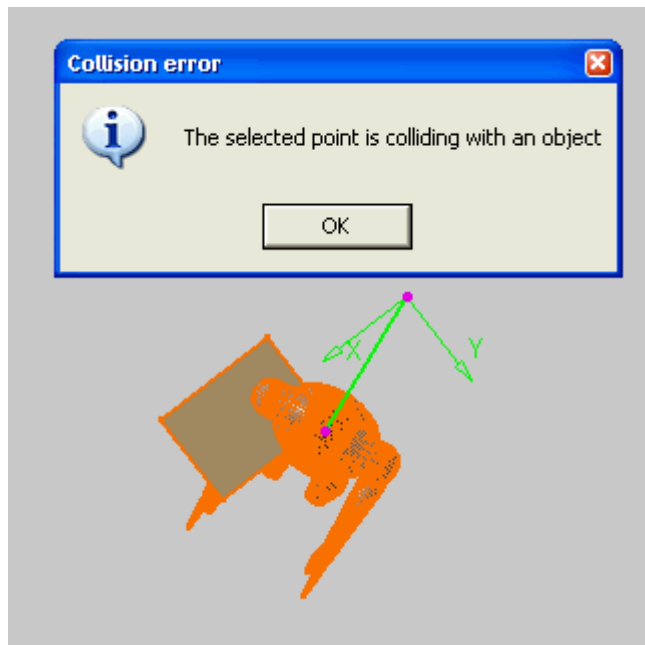
4. Enable collision free walk by checking the **Collision free computation** checkbox. This activates the Collision Attributes.



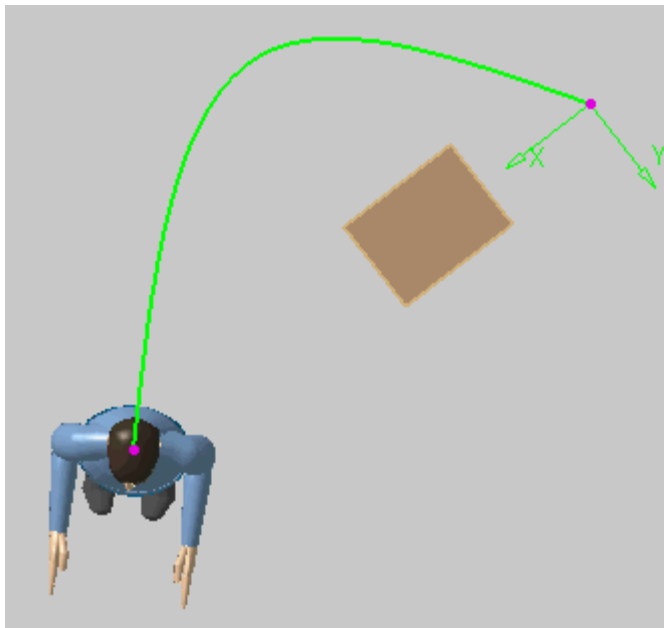
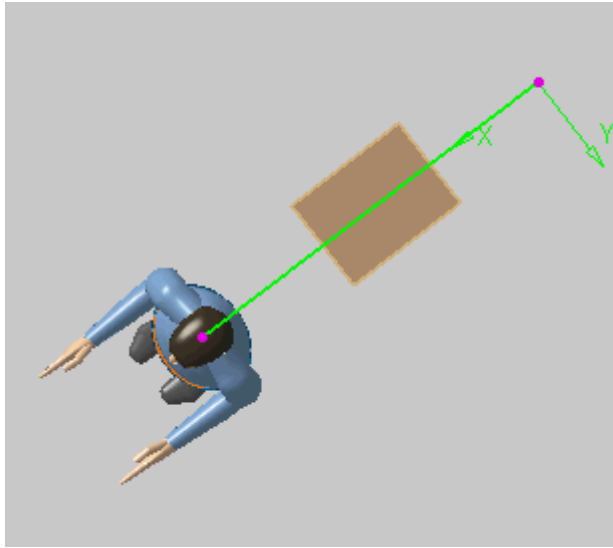
5. Set the Search Intensity and Clearance tolerance as required. Initially, by default, half of the manikin's width will be used as the clearance tolerance for collision.
6. Specify the spline points (positions) that define the walk path.

For each point selected, a collision free walk path will be computed from the last point, and dynamically shown on the viewer using rubber banding. Additional spline points will be automatically added if required.

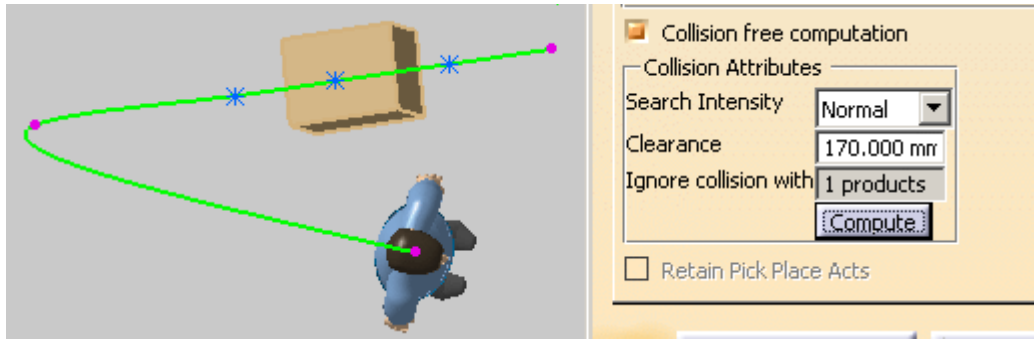
If the manikin's path collides with an object, the **Collision error** dialog appears. Clicking **OK** disregards this position, and you can select another.



7. If you select a location such that the manikin would walk through an object, then, when clicking on that location, the manikin's path is displaced around the object.



8. You may choose to ignore the collision. To do this, Click in the **Ignore collision with** input field and then select the object you want to ignore. You can ignore more than one object this way. To undo this, click the selection again. Once you have done your selections, click **Compute** to continue with the walk. The manikin just walks through the ignored object as shown below:



9. During editing of an existing Walk, the previously created walk spline will be presented along with the intermediate points that were used to create it, with or without the collision-free path option. If you select this option again, you can modify the spline as follows:
 - If you remove the intermediate spline points (let's say point 2 between point 1 and 3), a resulting spline, without collision, will be generated between points 1 and 3.
 - If you add an intermediate spline point (let's say point 4 between previously created point 2 and 3), then a collision-free spline will be generated between point 2 and 4, as well as between point 4 and 3.
10. Once you are satisfied with the spline, right-click and then click **Generate Postures** to generate the Walk activity.



Limitations:

1. This option will not be offered during creation of Auto walk, as no spline or particular path is associated to this activity at edit time. This means that during simulation, some auto walk might lead the manikin to collide with surrounding objects.
2. When the Walk is being created, surrounding objects are static. But they could be used in other activities such as Move (from DPM Assembly) in parallel or previous part of the process. And therefore, could collide with the manikin during simulation regardless of the way the Walk Activities were generated.
3. The collision free walk path will be available only for Forward Walk and Backward Walk Activities.

